

**A NEW ANAGRUS  
(HYMENOPTERA: MYMARIDAE),  
EGG PARASITOID OF *ERYTHRONEURA* SPP.  
(HOMOPTERA: CICADELLIDAE)<sup>1</sup>**

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**ABSTRACT:** This paper describes a new species of mymarid, *Anagrus erythroneurae*, a common egg parasitoid of the variegated leafhopper, *Erythroneura variabilis*, in the southwestern United States and northwestern Mexico, and of the grape leafhopper, *E. elegantula*, in California. The new species is compared with the European *A. ustulatus*, to which it is most similar, and with the North American species *A. epos* and *A. spiritus*.

An extensive search for natural enemies of the variegated leafhopper, *Erythroneura variabilis* Beamer, was conducted in 1985 and 1986 in the southwestern United States and northwestern Mexico (González *et al.* 1988) and again from 1987 to 1991 (D. González, pers. comm.). Several species of the genus *Anagrus* Haliday were reared from samples of eggs of *E. variabilis* and the grape leafhopper, *E. elegantula* Osborn, obtained from these collections. The taxonomy of the North American *Anagrus* is poorly known and parasitoids reared from *Erythroneura* spp. eggs could not be identified to species (K. Daane, pers. comm.). From recent studies of the Holarctic *Anagrus* we recognize a new species which is described below.

*A. erythroneurae* n. sp. was the most commonly reared natural enemy of *E. variabilis* in southern California, U.S.A. and Baja California, Mexico. *A. erythroneurae*, a member of the *atomus* species group of the subgenus *Anagrus* s. str. as defined by Chiappini (1989), was the only species of this group among *Anagrus* spp. reared from *Erythroneura* spp. eggs. It is easily distinguished from *A. epos* Girault, which is a member of the *incarnatus* species group and a well-known egg parasitoid of grape-infesting leafhoppers in California and elsewhere in the United States and Canada (McKenzie and Beirne 1972; Jensen and Flaherty 1982), in having only 3 sensory ridges on the antennal club. *A. epos* and other members of the *incarnatus* group possess 5 sensory ridges on the club.

Measurements are given in micrometers, with the mean followed, in

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parentheses, by the range and number of specimens measured, unless otherwise specified. The specimens of *A. erythroneurae* n. sp. studied are deposited in the collections indicated by the following acronyms: CNCI, Canadian National Collection of Insects, Ottawa; IEFA, Istituto di Entomologia, Facoltà di Agraria, Piacenza; UCRC, University of California, Riverside; USNM, National Museum of Natural History, Washington, D.C. An abbreviation used in the description is: F = funicular (flagellar in males) segment.

### *Anagrus erythroneurae*, NEW SPECIES

(Figs. 1-2)

**Female.** General color dark brown; head and metasoma darker to black; F2-F6 and club dusky; scape, pedicel, F1, posterior scutellum, propodeum, mesopleura, and legs light brown to brown.

Head slightly wider than mesosoma. Antenna (Fig. 1) sparsely setose; scape slightly curved, F1 almost globular, F2 slightly more than 2 times as long as F1, longer than F3 and usually subequal to F4, F5 slightly shorter or subequal to F6, F6 usually longest of funicle; F3 and F4 without sensory ridges, F5 with 1 sensory ridge, F6 with 2 sensory ridges, club with 3 sensory ridges.

Mesosoma 0.72 (0.69-0.85, n=10) times as long as metasoma. Mesoscutum without a pair of setae near notaulices. Forewing (Fig. 2, a) slightly shorter than body, 9.0 (8.6-9.3, n=10) times longer than wide, with 2 or 3 longitudinal rows of setae at broadest part leaving small oval hairless area subapically. Lengths of distal and proximal macrochaetae in ratio 3.0 (2.4-3.8, n=10). Marginal fringe with longest cilia more than 3 times, but less than 4 times, the wing width. Hindwing (Fig. 2, b) disk asetose, save for 1 complete row of small setae along posterior margin and sometimes 1 incomplete row of 1 to 4 setae along anterior margin on distal third.

Metasoma. Ovipositor slightly exerted beyond apex of metasoma. Ratio of total ovipositor length to length of its exerted part 15 (8-28, n=7). External plates of ovipositor each bearing 1 seta. Ovipositor/foretibia ratio 2.1 (2.0-2.2, n=10).

Measurements (n=10): Body: 571 (543-619); Head: 99 (95-114); Mesosoma: 198 (181-235); Metasoma: 275 (251-289); Ovipositor: 214 (198-230).

Antenna: Scape: 72 (68-80); Pedicel: 35 (32-37); F1: 17 (15-19); F2: 40 (36-45); F3: 35 (32-38); F4: 40 (38-44); F5: 48 (46-51); F6: 51 (48-59); Club: 95 (91-99).

Forewing: Length: 440 (418-456); Width: 49 (46-53); Venation: 144 (133-152); Marginal vein: 29 (27-34); Hypochaeta: 28 (20-34); Proximal macrochaeta: 20 (15-27); Distal macrochaeta: 59 (49-68); Longest marginal cilia: 184 (171-194).

Hindwing: Length: 395 (370-428); Width: 17 (15-18); Venation: 119 (114-129); Longest marginal cilia: 141 (133-158).

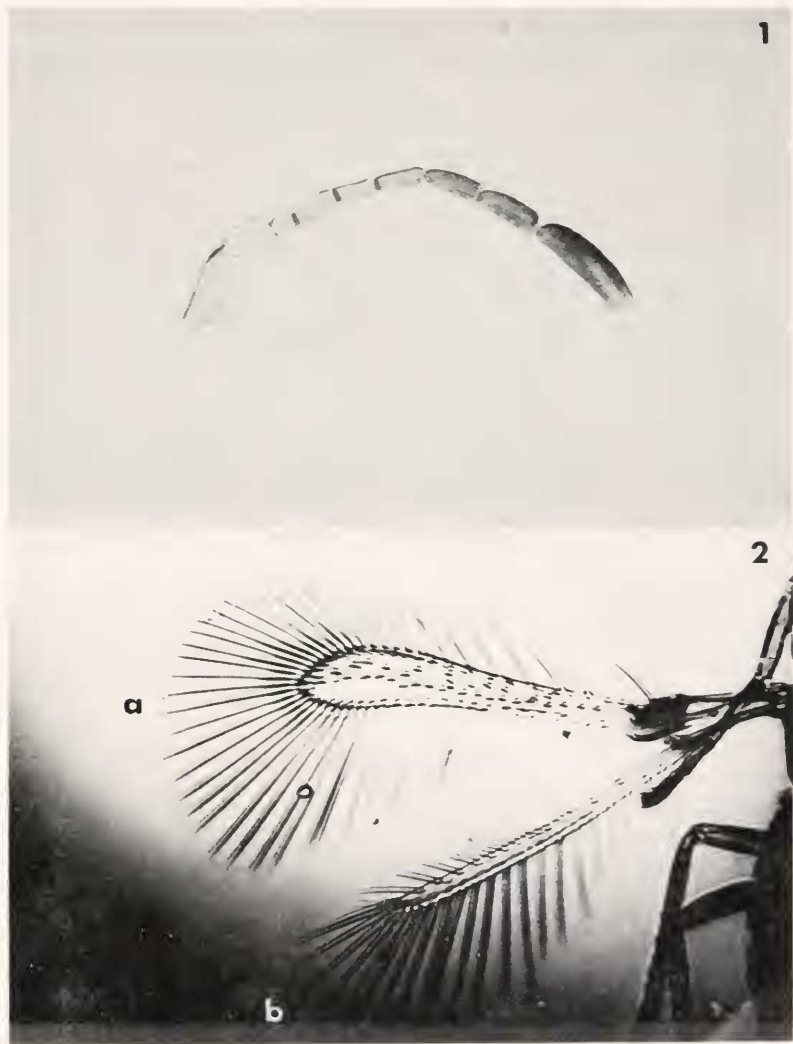
Legs:	Femur	Tibia	Tarsus
Fore	93 (87-99)	100 (95-106)	131 (118-141)
Middle	85 (77-91)	143 (137-150)	129 (122-140)
Hind	86 (82-91)	155 (148-167)	133 (122-141)

**Male.** Similar to female except forewing wider (index 7.7 (7.4-8.0, n=4)), sometimes with 3 or 4 incomplete rows of setae at broadest part of disk leaving no distinct hairless area. Genitalia typical for the *atomus* species group (Chiappini 1989).

Measurements (n=4): Body: 559 (523-570). Antenna: Scape: 60 (53-65); Pedicel: 35 (34-37); F1: 34 (32-36); F2: 43 (40-44); F3: 43 (38-46); F4: 42 (38-44); F5: 44 (39-46); F6: 46 (42-49); F7: 46 (42-48); F8: 46 (42-49); F9: 46 (40-49); F10: 47 (42-50); F11: 48 (43-51).

Forewing: Length: 495 (456-517); Width: 64 (57-68). Genitalia: 79 (72-84).

**Type material:** Described from the type-series of 10 ♀♀ and 4 ♂♂ on slides as follows: **Holotype.** ♀, U.S.A., California, Riverside Co., Coachella, ex. *Erythroneura variabilis* eggs on grape, VII.1988, D. González (deposited in USNM). **Paratypes.** 5 ♀♀, 1 ♂, same data as holotype (UCRC); 2♀♀, 1 ♂, same data (CNCI); 1♂, MEXICO, Estado de Baja California, Mexicali, ex. *Erythroneura variabilis* eggs on grape, 11.V.1988, D. González



Figs. 1-2. *Anagrus erythroneurae*, female. 1. Antenna; 2. Wings: a- forewing, b - hindwing.

(USNM); 1 ♀, 1 ♂, same data as above (IEFA); 1 ♀, MEXICO, Estado de Baja California, Ejido Guerrero, IX.1988, D. González (UCRC).

**Additional material examined:** U.S.A. California. Fresno Co., Parlier, 18.VI.1986, W. White and M. Moratorio, 10 ♀♀, 2 ♂♂, ex. *Erythroneura elegantula* eggs; Riverside Co., Mecca, 1.V.1986, D. González, 3 ♀♀, New Mexico. Las Cruces, 05.VII.1986, D. González, 4 ♀♀. MEXICO. Estado de Baja California. Ejido Veracruz, IX.1988, D. González, 7 ♀♀, 1 ♂; Ejido Guerrero, IX.1988, D. González, 5 ♀♀; Ejido Tehuantepec, IX.1988, D. González, 4 ♀♀, 2 ♂♂; Guadalupe, 9.IX.1988, D. González, 3 ♀♀, 1 ♂ (all UCRC).

Remarks: these specimens were mounted in a water-soluble solution and therefore are not included into the Paratype List.

**Etymology.** *Erythroneurae*, Latin genitif of the host genus.

**Diagnosis.** *A. erythroneurae* n. sp. is most similar to *A. ustulatus* Haliday from Europe but differs from the latter primarily in the darker body coloration and the arrangement of setae on forewing disk. The female of *A. erythroneurae* usually has 2, sometimes 3, rows of setae present anterior to the hairless area, contrasting with 4 or 5 rows in *A. ustulatus*. Other morphological features that distinguish the new species from *A. ustulatus* are as follows: ovipositor/foretibia ratio generally higher than 2.0 in the former but slightly lower than 2.0 in the latter (about 1.8-1.9); female forewing generally narrower in *A. erythroneurae*; club of female antenna is usually longer than F5 and F6 together (or at least equal) in *A. ustulatus* but shorter in the new species; and digiti of male genitalia are proportionally shorter than in *A. ustulatus*.

The new species may be easily distinguished from *A. spiritus* Girault, the only other member of the *atomus* species group so far described from the Nearctic region, by lack of a sensory ridge on F4 of female antenna.

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